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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/465,690	12/17/1999	PAUL H. LEAMON	4889:62	9186

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EXAMINER	
BOYCE, ANDRE D	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/465,690	LEAMON ET AL.	
	Examiner	Art Unit	
	Andre Boyce	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9 and 12-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9 and 12-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This non-final office action is in response to Applicant's amendment filed February 17, 2004. Claims 2, 10, and 11 have been canceled. Claims 1, 3, 12, and 16-18 have been amended. Claim 19 has been added. Claims 1, 3-9, and 12-19 are pending.

2. The previously pending rejections to claims 1 and 3-9 under 35 USC § 112 have been withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 7-9, and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In addition, subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation "wherein the vector represents a numerical value that indicates how well the current schedule fits the current agent's preferences", as seen in independent claims 1 and 19, is not described in the specification in such a way as to reasonably convey to or enable one skilled in the art.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 3-9, and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castonguay et al (USPN 5,911,134), in view of Crockett et al (USPN 6,044,355), in further view of Gabriner et al (USPN 5,848,403).

As per claim 1, Castonguay et al disclose a method for assigning a group of agents to a plurality of available schedules (see column 17, lines 65-67), comprising the steps of determining preferences for a plurality of factors for each agent (see column 18, lines 9-11), assigning an order of importance for the plurality of factors for each employee (see column 18, lines 14-18), determining a ranking for each agent from highest to lowest based on given criteria (seniority of the agent, column 3, lines 35-36), and determining a difference value for each factor between a current schedule and the agent's preference for that factor (i.e., match between assigned tours and preferences, see column 19, lines 12-16). The match being positive or negative (e.g., Does it match the agent's preference?, yes or no), constitutes a difference value between the preference and the schedule. Castonguay et al also

discloses one or more steps performed by an electronic processing device (see figure 4).

Castonguay et al does not explicitly disclose performing the sub-steps on an iterative basis, from a highest ranked agent to a lowest ranked agent, the sub-steps being assigning the difference value for each factor to a bit range within a vector for the current agent and current schedule wherein the factor having a highest importance is assigned to a highest order bits of the vector and remaining factors assigned to subsequent orders of bits in an assigned order of importance, wherein the vector represents a numerical value that indicates how well the current schedule fits the current agent's preferences, and assigning to the current agent the schedule having the lowest numerical value.

Crockett et al discloses a net staff array and skills availability array used to plan and schedule workforce personnel (column 4, lines 55-58). The arrays may contain difference values, indicating for example staff and skill level needed to cover a particular distribution of calls (column 5, lines 47-56). Further, Crockett et al disclose further refinement of the skill array, including agent preferences (column 8, lines 41-47). Crockett does not disclose an ordered bit range within the vector. Gabriner et al discloses soft constraints (i.e., preferences) considered in producing schedules. Resource bit array 30 includes and ordered set of bits, wherein a predetermined index (i.e., difference value assignment) indicates a resource capability (see column 7, lines 40-45). Castonguay, Crockett, and Gabriner are all concerned with effective agent scheduling, therefore it would have been obvious to one having ordinary skill

in the art at the time the invention was made to include assigning the difference value for each factor to a bit range within a vector for the current agent and current schedule wherein the factor having a highest importance is assigned to a highest order bits of the vector and remaining factors assigned to subsequent orders of bits in an assigned order of importance, wherein the vector represents a numerical value that indicates how well the current schedule fits the current agent's preferences, in Castonguay et al, as seen in Crockett and Gabriner. By using this vector assignment system the Castonguay et al method would be able to rapidly and effectively evaluate and assign schedules based strictly upon agent preference, just as the Castonguay et al method already implements for tour coverage (see column 18, lines 33-42).

Claim 3 is rejected based upon the rejection of claim 1, since it contains the same limitations. Further, Castonguay et al does not explicitly disclose the unassigned vectors first being calculated for the highest ranked agent, and the schedule having the lowest vector being assigned to that agent, further including determining the lowest vector for the next highest ranked agent, and repeating until each agent's schedule has been compared to every other agent's schedule. Gabriner et al also discloses an indexed location in each resource bit array 30 that indicates a qualification that corresponds to a constraint in a task bit array 50 (i.e., unassigned vector). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include this vector assignment and comparison step within the Castonguay et al method, in order to ensure that the

effectiveness of the vector assignment is maintained. This vector assignment would be an obvious progression for the Castonguay et al method, which already gives provisional choice to higher ranked agents (see column 19, lines 61-67 and column 20, lines 1-2).

As per claim 4, Castonguay et al disclose agents ranked according to seniority (see column 17, lines 65-67 and column 18, lines 1-3). In order to generate schedules to satisfy agent seniority, the Castonguay et al method inherently has to rank the agents.

As per claim 5, Castonguay et al disclose agents ranked according to performance (see column 16, lines 23-26). The "Results" dataset maintained by the Castonguay et al method, which contains the agent performance statistics, would inherently have the ability to rank the agents.

As per claim 6, Castonguay et al does not explicitly disclose a schedule being assigned from a higher ranked agent to a lower ranked agent only if the assignment will decrease the lower ranked agent's vector without increasing the higher ranked agent's vector. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include this schedule swapping between agents within the Castonguay et al method. This similar type of schedule swapping, in order to improve the match between assigned tours and agent preferences, already seen in the Castonguay et al method (see column 19, lines 11-16) would ensure that every agent is given the lowest possible vector without

compromising the higher ranked agent's vector, thereby improving the effectiveness and accuracy of the overall schedule assignment.

As per claim 7, Castonguay et al disclose the plurality of factors being selected from the group of start times, break times, lunch times, days off, end time, lunch length, split shift parameters, and hours worked (see column 18, lines 14-18).

As per claim 8, Castonguay et al disclose the plurality of schedules being preliminary assigned schedules (see column 18, lines 65-67 and column 19, lines 1-3). Once the initial tour is generated in the Castonguay et al method, the preliminary schedule is complete.

As per claim 9, Castonguay et al disclose the plurality of schedules being a pool of schedules (see column 19, lines 34-35).

Claims 12-15 are rejected based upon the rejection of claims 3-6, respectively, since they are the computer program product claims, corresponding to the method claims.

Claims 16-18 are rejected based upon the rejection of claims 7-9, respectively, since they are the computer program product claims corresponding to the method claims.

Claim 19 is rejected based upon the rejection of claim 1, as disclosing the same limitations. Further Castonguay et al does not explicitly disclose for each schedule that is assigned to an agent that is lower in ranking than the current agent, performing the sub-steps as seen in claim 1, using the lower-ranked agent's

schedule. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include this schedule swapping between agents within the Castonguay et al method. This similar type of schedule swapping, in order to improve the match between assigned tours and agent preferences, already seen in the Castonguay et al method (see column 19, lines 11-16) would ensure that every agent is given the lowest possible vector without compromising the higher ranked agent's vector, thereby improving the effectiveness and accuracy of the overall schedule assignment.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Crawford Jr. et al (USPN 6456996) disclose solving constrained optimization problems.

-Grossman et al (USPN 5621790) disclose contact campaigns optimized to contact the maximum number of individuals.

-Jacobs et al (Microcomputer-Based Workforce Scheduling, 1993) discloses using microcomputers to solve weekly labor tour scheduling problems.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre Boyce whose telephone number is (703) 305-1867. The examiner can normally be reached on 9:30-6pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

adb

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